

REMARKS/ARGUMENTS

At the outset Applicant would like to thank the Examiner for the obviously thorough examination that has continued in this Reissue Application and for the many helpful suggestions. Applicant's attorney also apologizes for the errors that necessitated the rejection of the claims under the second paragraph of §112. It is believed that the present amendment clears up all of the §112, second paragraph problem.

With respect to the Examiner's suggestion that Claim 4 be represented in independent form, Applicant solicits the Examiner's indulgence in Applicant amending Claim 4 to overcome the §112, second paragraph problems rather than placing Claim 4 in independent form. In any event, it is believed that all of the §112 problems with respect to Claims 4-6 set out in the second paragraph of the Office Action have been overcome by the amendments to Claims 4, 5 and 6.

With respect to Claims 32-33, Applicant agrees with the Examiner that referring to a current pattern as comprising an injection system is, at best, in artful wording. In any event, it is believed that the amendment to Claim 32 overcomes the §112, second paragraph rejection.

Applicant has amended Claims 1, 7 and 9 in the manner suggested by the Examiner in Paragraph 4 of the Office Action by changing the wording "the opposite side wall to the bottom" to "said side wall opposite said first component to the bottom."

The specification stands objected to under 35 U.S.C. §112, first paragraph, and under 35 U.S.C. §132 for the insertion of new matter. Specifically, the Examiner points to the last sentence added to the paragraph beginning at Col. 5 and l 12. Applicant has amended the wording to recite that if multiple diffusers are used, they must be positioned in sufficient proximity to one another such that the current or circulation pattern depicted in Fig. 5 is achieved. It is believed that this language

is totally consistent with and supported by the specification. To begin with, Fig. 5 is described in Col. 4, ll 16-18 as a view of the current pattern of a preferred embodiment. Indeed, the formation of the current pattern is at the heart of the invention and in this regard, the Examiner's attention is respectfully directed to Col. 3, ll 19 *et seq.* where features of the invention are described as being the creation of an improved current in the wastewater treatment plant. As the Examiner correctly points out, the use of multiple diffusers or drop lines is mentioned in Col. 3, ll 56-60 and Col. 6, ll 17-25. However, the Examiner takes the position that there is no indication that Applicant understood Fig. 5 to depict a flow pattern that resulted from the use of multiple diffusers. Applicant respectfully submits that it only logically follows that if the invention was the creation of the current pattern shown in Fig. 5 then, if multiple diffusers are employed, they must be positioned such as not to frustrate that purpose. Indeed, in Col. 3, ll 56-60 it is pointed out that when multiple air lines or diffusers are employed, they are in "close proximity." Further, in Col. 6, ll 17 *et seq.*, and in referring to the use of multiple diffusers, it is stated that when multiple diffusers are used, it allows the introduction of a higher volume of oxygenation gas "while creating the circulation or current pattern of the invention." Applicant respectfully submits that it is abundantly clear that (a) the use of multiple diffusers is clearly disclosed (b) and defined current pattern of a preferred embodiment is set forth in Fig. 5 and (c) it necessarily follows that multiple diffusers, if used, would have to be positioned so as to achieve the desired current pattern, the crux of the invention. With respect to the last point, and as pointed out above, this is expressly supported by the language in Col. 6, ll 16 *et seq.* It is respectfully requested that the rejections under 35 U.S.C. §112, first paragraph and 35 U.S.C. §132 be withdrawn.

Claim 10 has been amended in a manner that hopefully clears up the issue of Applicant inadvertently substituting periods for commas. The error is regretted.

Lastly, with respect to the non-art rejections, the typographical error in Col. 6, ll 12 has been corrected.

Turning to the art rejections, Claim 1 stands rejected as anticipated over *Adams* for the reasons of record. Claim 1 has been amended to recite that the current pattern is such that wastewater in the clarifier remains largely undisturbed. Support for this amendment can be found in Col. 5, ll 39-50. The amendment to Claim 1 clearly distinguishes Claim 1 from *Adams*. More specifically, amended Claim 1 focuses on the nature of Applicant's invention, i.e., that the current pattern is in the aeration vessel and not in the clarifier. This is to be contrasted with the *Adams* system wherein, of necessity, there is substantial "disturbing" of the water in *Adams* clarifier that *Adams* refers to as the settling chamber. In this regard, the Examiner's attention is called to Col. 11 34-43 of *Adams* where it is pointed out that the downward velocity of sludge through the settling chamber is induced by providing a pump to transfer liquid from the aeration chamber to the settling basin, as opposed to relying solely on gravity to settle the solids. As further pointed out by *Adams* in Col. 4, ll 3-8, a key feature of the invention is the "induced downward sludge velocity provided by recycled conduit 140 terminating in the center well provided by flume 142. The recycle flow of wastewater is provided by the air lift pump through conduit 140 into center well 142 to induce the downward velocity of sludge, the key to this invention." One need only to look at the drawings of *Adams*, e.g., Figs. 2 and 7 to conclude that there is substantial turbulence of the water in *Adams* settling chamber. Indeed, were it not for this "turbulence," the whole thrust of the *Adams* invention would be frustrated, particularly since, as *Adams* points out the downward sludge velocity is a key to the

invention. So as to emphasize this feature, *Adams* points out in Col. 3, ll 26-31 that the induced downward sludge velocity is preferably in the range of about 20' to about 60' per hour as opposed to a natural settling velocity induced by gravity that would be about 0.5' to about 3' per hour. Thus, whereas in Applicant's system, the clarifier houses a substantially quiescent zone of wastewater, in the *Adams* invention the clarifier (settling chamber) is subjected to what can only be characterized as relative turbulence. In and of itself, this amendment to Claim 1 patentably distinguishes Applicant's invention from *Adams*.

However, Applicant would again hasten to point out that there is absolutely no disclosure or suggestion in *Adams* that the current flow set forth in Applicant's claims is achieved in the *Adams* system. Much of the dialogue between Applicant and the Examiner has focused on the fact that *Adams* teaches a horizontal sweep velocity under the clarifier or settling chamber. However, it is believed that that issue has taken on a life of its own, indeed perhaps occasioned by Applicant's remarks, whereas the real issue is whether *Adams* discloses any system that would set up Applicant's claimed current pattern? Applicant respectfully submits that the answer to that question is "no." The *Adams* system may, indeed, provide one component of Applicant's pattern, i.e., Applicant's claimed fifth component that flows across the bottom under the opening to the clarifier chamber. However, save for that component, Applicant fails to see how it can be reasonably contended that the *Adams* system sets up a current pattern even remotely resembling Applicant's claimed current pattern. It is respectfully submitted that Claim 1 is clearly patentable over *Adams*.

Claims 1, 4, 5, 7, 8, 9, 10, 17, 20-24, 25-27 and 29-33 stand rejected as unpatentable over *McKinney* '470 alone or in view of *Adams*, or over *McKinney* '470 in view of Applicant's admissions regarding the state of the prior art and *Adams*. Primarily, the issue involved in this

rejection is the Examiner's position that during shutoff of one the two diffusers in the *McKinney* '470 system, Applicant's claimed current pattern would be achieved if the pyramid shape deflector at the bottom, as shown in *McKinney* '470, were deleted particularly since the patent in reissue, in the Background Section, states that a modification of a wastewater treatment plant includes one wherein there is no pyramid shape deflector beneath the clarifier. The Examiner has translated this latter discussion of the *prior art* into a position that it would be obvious to have omitted the pyramid shape deflector from *McKinney* '470 to end up with Applicant's claimed invention. Further, the Examiner has taken the position that if the deflector is omitted, then Applicant's claims read on *McKinney* '470 when one of the diffusers is taken out of service for repair.

With all due respect, the Examiner is redesigning *McKinney* '470 in a manner inconsistent with its designed mode of operation. In this regard, *McKinney* '470 does not teach or suggest any embodiment of the invention wherein there is only one air hose or diffuser – rather, the only disclosed embodiment of *McKinney* '470 is that wherein there are two diffusers at 180° apart. Furthermore, the patent in reissue in Col. 2, ll 24-33 expressly teaches that dead spots may also occur with the use of diffusers in *two* or more locations due to the interference pattern produced by such positioned multiple diffusers. Thus, we have a situation where *McKinney* '470 only discloses the use of two diffusers at 180° apart and the patent in reissue teaches that the two diffusers so positioned would create an interference pattern precluding the creation of Applicant's claimed current pattern. In this regard, it is abundantly clear with reference to Fig. 5, that if there was a second diffuser disposed in the vessel at 180° to diffuser 40, the current pattern shown in Fig. 5 could not possibly be obtained.

The Examiner's position with respect to the removal of one of the diffusers in *McKinney* '470 when it is malfunctioning is misplaced *vis-a-vis* rendering Applicant's claims obvious. As pointed out above, the Examiner is modifying *McKinney* '470 in a manner contrary to its express teaching. Indeed, in this regard, in Col. 3, ll 3-10 in *McKinney* '470, it is specifically taught that if a diffuser plugs up or needs to be removed for repair replacement, a hose is disconnected from the valve manifold and a new or repaired hose reconnected to the valve manifold. Those lines alone teach that the *McKinney* '470 system must have two diffusers, lest the wastewater plant be operating in a manner inconsistent with its intended operation.

The Examiner, in response to Applicant's arguments, has raised the rhetorical question of why *McKinney* '470 provided a shutoff valve for each of the air drop lines 42 and 44, as well as shutoff valve 46. To begin with, the valves are not described as shutoff valves and valve 46 is specifically called a "main control valve." Valves 42 and 44 are not cutoff valves but rather throttling or choke valves and are there for the purpose of ensuring that equal air flow flows through both of the drop lines. This is perhaps best demonstrated in Col. 6, ll 15-25 of the reissue patent where it is taught that when multiple diffusers are employed, there is a pressure regulator, such as a choke valve, to ensure that an equal amount of oxygenation gas is flowing to each diffuser. That is precisely the purpose of valves 42 and 44 in the *McKinney* '470 system, i.e., to ensure that there is an equal flow of oxygenation gas out each of the diffusers.

Furthermore, for the system shown in the *McKinney* '470 Patent to comply with NSF Regulations, one of the valves cannot be shut off, even momentarily. Waste treatment plants of the type under consideration are certified based on the way they are designed and intended to operate. In the case of the *McKinney* '470 system, this means that both aeration systems are in operation and

the system is certified based on that mode of operation. Accordingly, to shut off one of the valves would now mean that the *McKinney* '470 system is operating illegally and that it is not operating in the manner that it was certified. Thus, the Examiner is arguing for an operation of *McKinney* '470

- (a) in a manner inconsistent with the express teaching of how the system is supposed to work and
- (b) in a manner that would violate NSF certification. NSF certification requires that once a system is certified, it cannot be modified and still be legal.

Applicant would also point out that typically, diffusers of the type under consideration operate at an air pressure of 2-3 psi. Accordingly, at such low operating pressures, if one of the lines is removed, all air will simply escape from the removed line and there will be no air flowing through the line that is still disposed in the vessel. In response to this the Examiner argues that the skilled artisan would know to shut off the valve to the removed line and in this regard, relies on the teachings of the *Haugland* Patent and specifically Col. 6, 15 thereof. Applicant respectfully submits that the *Haugland* Patent has nothing to do with a condition wherein two valves are being used to equalize flow through two separate lines. In the *Haugland* system, an upstream valve in a high pressure line is used to reduce pressure while a downstream valve is being serviced. However, both valves in *Haugland* are in the same line.

Furthermore, contrary to the Examiner's position that the skilled artisan would have known to shut off the valve leading to the defective diffuser, on the contrary, the skilled artisan would not shut off the valve to the diffuser line being serviced. The skilled artisan would make sure that neither valve was touched, such that when the repaired line was placed back in the vessel, both lines would be balanced as they were prior to removal of the malfunctioning diffuser. It is respectfully



-21-

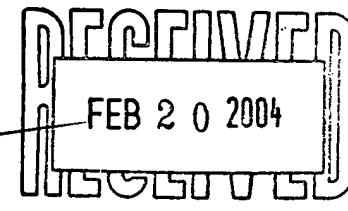
submitted that all claims are patentable over any combination of *McKinney* '470, *Adams* or Applicant's admissions regarding the state of the prior art.

Applicant notes with appreciation the allowability of Claims 6 and 28 if presented in independent form. By virtue of this amendment and remarks Applicant respectfully submits that all other claims presented for consideration are also in condition for allowance, which is hereby earnestly solicited and respectfully requested.

Respectfully submitted,



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By: 